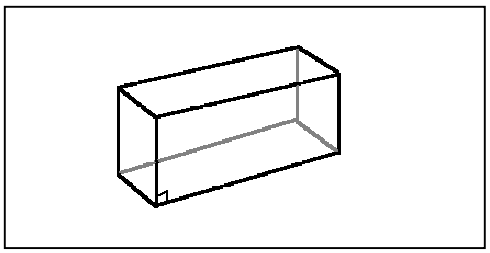
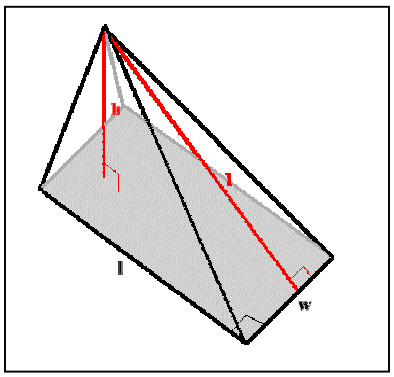
Activity #3: Volume Investigation (Student version)
Math

Right Prism



Right Pyramid



***Note to students*: Lab teams of two or three students are required for this activity.**

***Purpose*: To construct a right prism and a right pyramid of same base and height**
To understand better the Pythagorean Theorem
To rediscover the relationship between exact and approximate answers
To investigate the volume formulas for prism and pyramid
To utilize constructions and known geometric properties

***Materials*: folder-weight paper, metric ruler, compass, protractor, scotch tape, stapler, calculator such as the TI-83, small objects of the same size to fill each solid**

***Activity Explanation*: In this activity, teams of two students will construct models of one right prism and one right pyramid. These two solids must have congruent bases and congruent heights. Students will test the formulas for volume, that is,** $V_{prism} = Bh$ **and** $V_{pyramid} = \frac{1}{3}Bh$. **Students must construct each solid so that it can be filled, so as to approximate its volume. Thus, the base of each solid must be removable.**

***Activity Procedure*:**
1. Design the nets for the prism and pyramid. Label each side and heights/altitudes, using mm. Show all work. Pass in net designs for teacher check.

2. Cut out each net and fold each to form the solids. Remember the solids need to be filled to confirm the volume formulas. Pass in solids for teacher check.
3. Test the validity of the volume formulas by filling each solid. Using each unit of fill as the volume unit, record the number of units needed to fill each solid. What

volume unit did you use? _____
What is the volume of the prism? _____
What is the volume of the pyramid? _____
Be sure to label your answers in correct units.

***Analysis and Extension*:**
1. Describe the activity, giving special note to the easy and harder spots in the activity. Discuss the math you used in the activity. Do you think you will remember these formulas easier now? Will this activity help you remember any other volume formulas?
2. Calculate the surface area of each model. Show all work.
Surface area of prism = _____
Surface area of pyramid = _____
Are these related the same way as the volumes? _____
_____
_____
_____
_____